

An Innovative Technique of Transoral Resection of the Styloid Process in Eagles Syndrome Using Kerrison Punch

Purushothaman P K*, Ramakrishnan R**, Vikram P S J**

* Department of ENT, Head and Neck Surgery, SRM Medical College Hospital and Research Centre, SRM nagar, Potheri-603203, Kancheepuram District, Tamil Nadu, India.

Abstract- A 34 year old male patient presented with persistent pain in the left side of the throat. Tonsillectomy had been done on the patient 5 years back. An elongated left sided styloid process (3.5cms) was diagnosed and was removed by transoral approach using an innovative technique of KERRISON PUNCH following which the patient was relieved from his symptoms.

Index Terms- Elongated styloid, Transoral approach, Kerrison punch

I. INTRODUCTION

Elongated styloid process occurs in 4 % of the general population, while only a small percentage of these patients are symptomatic. The normal adult styloid process length is considered to be between 2 to 3 cms. The longest recorded elongated styloid process so far that caused symptoms and hence underwent surgery was around 6.5cms, though in an adult human dry skull length up to 8cms has been recorded.

It was EAGLE in 1937 who first defined “stylalgia” as an autonomous entity related to abnormal length of styloid process or to mineralization of the stylohyoid ligament complex [1].

Eagle primarily described 2 syndromes

(1) **Classic styloid syndrome** – it frequently follows tonsillectomy and is characterized by pharyngodynia localized in the tonsillar fossa and sometimes accompanied by dysphagia, odynophagia, hypersalivation, foreign body sensation and more rarely by temporary voice change.

(2) **The stylo-carotid syndrome** – it is not correlated with tonsillectomy. In this condition the stylohyoid apparatus compress the internal and/or the external carotid arteries and especially their perivascular sympathetic fibres, resulting in a persistent pain irradiating in the carotid [1].

Pathogenesis is still debated. Surgical trauma or local chronic irritation could cause osteitis and periosteitis of styloid complex with consequent reactive ossifying hyperplasia [1].

II. CASE REPORT

A 34 year old male patient referred from a private hospital with chief complaints of persistent pain in the throat and more in the left tonsillar fossa which gets aggravated on turning the head.

He had undergone tonsillectomy 5 years before for recurrent throat pain. On clinical examination, the elongated styloid process was palpated in the left tonsillar fossa. As the pain was persistent even after tonsillectomy, 3D reconstruction imaging of styloid process was made which revealed an elongated styloid process of 3.5 cms on the left side. Following the diagnosis medical treatment was given for 3 months (oral analgesics, anticonvulsants, antidepressants, gargles) which were not helpful. Following failure of medical management surgery was planned, through transoral approach; incision was made on the tonsillar fossa. Styloid process was identified and delineated. The mucoperiosteum of styloid process was incised. Styloid bone was made bare by dissecting away the styloid-hyoid apparatus. The tip of styloid process about 0.5cm was excised by a precise cut using a KERRISON PUNCH (**none reported so far in literature**) Following surgery the patient was totally relieved of his symptoms.

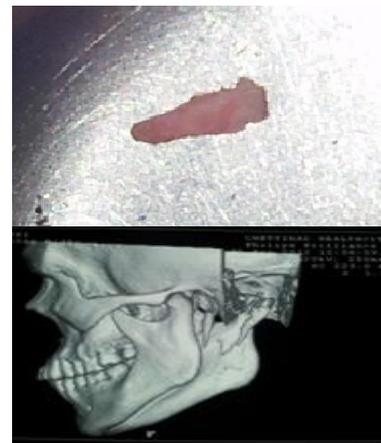


Figure.1 Post op picture showing elongated styloid measuring 3.5 cms and showing 3D reconstruction imaging of styloid process

III. DISCUSSION

Styloid process of temporal bone is a slender projection attached to base of skull. The styloid-hyoid apparatus extends from the tip of the styloid process, the stylohyoid ligament passes downwards and forwards to the lesser cornu of the hyoid bone. All these structures are derived from second branchial arch

cartilage. Eagle defined the length of a normal styloid process at 2.5 to 3 cms, while the length of styloid process varies greatly. An elongated styloid process occurs in 4% of general population while only small percentage (between 4 to 10.3%) of these patients are symptomatic. The styloid process and the stylohyoid ligament have been linked to Eagle's syndrome. The symptomatology is characterized by the foreign body sensation in the pharynx, causing difficult and painful swallowing and earache [1, 2]. Pietro Marchetti observed an elongation of the styloid process in the 17th century in 1937. It was Watt W. Eagle who first described stylalgia, later called the Eagle's syndrome. Other names of Eagle's syndrome are Stylalgia, elongated styloid process, long styloid process syndrome, stylohyoid disorder, neuralgia of styloid process, cervicopharyngeal pain syndrome. In the literature it has been referred to as a secondary pathology following traumatic fracture. It can also be the consequence of a difficult endotracheal intubation leading to mineralisation of the styloid process and calcification of the ligament complex. A differential diagnosis of Eagle's syndrome should include Trigeminal Neuralgia, Migraine, TMJ disorders, Temporal Rachitis, Unerupted or impacted molar teeth and Faulty dental prostheses [3, 4]. Diagnosis can be made by digital palpation of the styloid process in the tonsillar fossa. Diagnosis can be confirmed by imaging studies. Lateral view radiographs of the skull can be taken, but the disadvantage of this view is the overlapping between styloid processes of the both sides and with adjoining bone structures. An anteroposterior view radiograph should be taken to determine whether the styloid process is medially or laterally deviated. Orthopantomogram shows the entire length of the process distinctly and its deviation can also be made out clearly. 3D-CT scanning is extremely valuable tool in ascertaining the length as well as alignment of the styloid process [5, 6].

Treatment of symptomatic elongated styloid process includes both medical and surgical therapy. Medical management includes the following analgesics, anticonvulsants, Tricyclic antidepressant, and local infiltration with steroids or long acting local anesthetic agents. Two surgical approaches to styloidectomy are 1) Intraoral approach 2) Extraoral approach. Intraoral approach includes Transpharyngeal tonsillar fossa approach and Anterior pillar approach [7]. Instruments used to remove styloid are bone nibbler and artery forceps. Advantage of using KERRISON PUNCH is precise cutting of the tip under visualisation without injuring other structures. Main surgical complications associated with styloidectomy are deep space neck infection, injury to main neurovascular structures, haemorrhage, temporary alterations of speech and swallowing, facial nerve injury [7].



Fig 2. Kerrison punch used for precise cutting of elongated styloid process

IV. CONCLUSION

Elongated styloid process is a diagnosis that should be considered in the evaluation of recurrent neck, throat or facial pain and dysphagia with or without radiation of pain to the ipsilateral ear. A novel technique of using Kerrison punch is very useful in terms of precise cut of the bone and not injuring nearby vital structures. Eagle's syndrome though the incidence being 4 to 7% is largely under diagnosed. A thorough clinical and radiological examination will reveal impending insult. Proper diagnosis can definitely be of immense help to rationalize the line of management and the ultimate clinical outcome.

REFERENCES

- [1] Eagle W. Elongated styloid process. Report of two cases. *Arch Otolaryngol.* 1937;25:584-587.
- [2] Review article: a rare cause for cervical pain: eagle's syndrome. *International Journal of Dentistry* Volume 2009 (2009), Article ID 781297, 3 pages doi:10.1155/2009/781297
- [3] Thot B, Revel S, Mohandas R, Rao AV, Kumar A. Eagle's syndrome. Anatomy of the styloid process. *Indian J Dent Res* 2000;11(2):65-70.
- [4] *International Journal of Anatomical variation* (2010)3:100-102.
- [5] Rodriguez-varquez JF, Merida-Velasco JR, Verdugo-Lopez S, Sanchez-Montesinos I, Merida-Velasco JA. Morphogenesis of the second pharyngeal arch cartilage (Reichert's cartilage) in human embryos. *J Anat.* 2006;208:179-189.
- [6] Carmarda AJ, Deschamps C, Forest D I. Styloid chain ossification: a discussion of etiology. *Oral surg Oral Pathol* 1989; 67:508-14.
- [7] An unusually lengthy styloid process - Prabhu L V, Kumar A, Nayak S R, Pai M M, Vadgaonkar R, Krishnamurthy A, Madhan Kumar S J. *Singapore Med J* 2007;48(2):e34

AUTHORS

First Author – Purushothaman P.K, MS(ENT), Associate professor, SRM medical college hospital and research centre, entpurush@gmail.com

Second Author – Ramakrishnan R, MS(ENT), DNB(ENT), Assistant professor, SRM medical college hospital and research centre, openupramki@gmail.com

Third Author – Vikram P.S.J, MBBS, Postgraduate resident, SRM medical college hospital and research centre, vikrampsj@yahoo.com

Correspondence Author – Purushothaman P.K, MS(ENT),
Associate professor, SRM medical college hospital and research

Centre, entpurush@gmail.com, contact no: +91 9840723243, 044
47432386